Synopsis of the Thesis entitled

Attitude and Behaviour of Health Science Professionals Towards Evidence Based Medical Practice and Information Resources: A Diagnostic Study in Coastal Karnataka

Submitted to Mangalore University, Mangalagangothri

in fulfilment of the requirement for the degree of

DOCTOR OF PHILOSOPHY

in

Library and Information Science

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July 2016

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1. Introduction

Health care services are undergoing transition with more emphasis on quality of patient care and safety. There has been continuous research going on in the health sector, so that more effective newer drugs are manufactured, innovative surgical methods and procedures are invented to facilitate clinicians and doctors to provide better treatment and patient care. In the current health care environment there is increasing expectation that practice should be supported by current research and that care provided needs to be efficient and cost effective. These expectations have led to the emergence of evidence based practice (EBP) a concept in which clinical experiences and intuition are not replaced, but supported by clinical skills such as efficient literature searching and critical appraisal of clinical literature. With the development of the Internet in the 1990s and with the growth of electronic publishing, librarians found themselves at the forefront of a new and complex environment that would bring a bewildering array of information directly to clinicians and their patients. The simultaneous development of evidence based health care has provided the library and information science profession with an ever greater imperative to ensure that the best available knowledge is to hand when needed by clinicians. Health science librarians play an essential role in supporting the practice of evidence based medicine. Thus the medical libraries need to improve the quality of the resources and also the infrastructure that enables the health professionals to access the information at the point of care.

1.1 Evidence Based Medicine (EBM)

Evidence based medicine has been defined as “The conscientious, explicit and judicious use of current best evidence in making decisions about the care of individual patients” and as “The integration of the best research evidence with clinical expertise and patient values”(Sackett, Rosenberg, Gray, Haynes, & Richardson, 1996). The adoption of EBM is all the more imperative since the

“Internet Revolution” has provided access to medical literature, not only to the medical world but also to the common man as well. The most considerable hallmark of the information revolution in medicine is known as the “Basic leap from bedside to Computer”(Jordan, 2002). This phenomenon has provided an appropriate environment for the development of Evidence Based Medicine (EBM).

1.2 Evidence Based Medical Practice (EBMP)

The practice of evidence based medicine is emerging as a new component of medical practice. It involves sensible and careful use of best current evidence to make decisions about care of the individual patient. EBMP has become a top curriculum in medicine. The knowledge and skills obtained during the training in a medical college are insufficient to carry on lifelong successful clinical practice. To make clinical decisions, the practicing doctor needs to update his knowledge periodically with the finding of scientific research and medical research. The scientific research has to be translated into clinical practice for improving the patient care provided to the community. Ultimately the goal of evidence based practice is to continuously improve patient care based on new research development. The National health committee has given a clear health message that initial education and subsequent clinical experience is no longer considered sufficient to sustain a career in health practice.

The essential feature of EBM is that the practitioner when faced with any problem/dilemma in the clinical context of a patient should be able to perform a literature search, identify the evidence available pertaining to the clinical condition, critically evaluate it and determine the best evidence “to diagnose, treat and manage the patient. The key element in this cycle is the ability of the clinician to search and retrieve the literature in the shortest possible time in an efficient manner.

1.3 EBM and development of medical libraries

With the development of the Internet in the 1990s and with the growth of electronic publishing, librarians found themselves at the forefront of a new and complex environment that would bring a bewildering array of information directly to clinicians and their patients. The simultaneous development of evidence based health care has provided the library and information science profession with an ever greater imperative to ensure that the best available knowledge is to hand when needed by clinicians. Evidence based medicine, the new clinical health care mode, information resources and services in medical college libraries face severe challenges. As the clinicians are very busy with their patient care and other activities, they hardly find time to search for literature. Some clinicians lack literature searching skill. All these reasons have created an opportunity and demand for medical libraries and librarians. Thus the medical libraries need to improve the quality of the resources and also the infrastructure that enables the health professionals to access the information at the point of care. Health science librarians play an essential role in supporting the practice of Evidence Based Medicine. The core skills involved in the practice of evidence based medicine are 1.Literature retrieval 2. Critical appraisal 3. Information synthesis 4. The ability to act on the results. In this the first 3 are applicable to librarianship. In the words of Judith Palmer " Evidence-based practice requires some expertise in information handling and a range of information skills that include the ability to frame questions, devise appropriate strategies, locate information, interrogate sources, judge relevance, understand bias, record and organize information, interpret and analyze, reorganize/re-order information and present evidence to others. These skills are commonly possessed by library and information professionals, but not necessarily by other health professionals".

1.4 Factors facilitating EBMP and information resources

The health professionals especially the clinicians have realized that their experience that has enabled them to sharpen the clinical skills and improve clinical decision making, if not accompanied by updating of knowledge can result in decline of clinical practice. The common man has access to the literature as the clinicians through numerous sources and they are looking for interpretation and opinion. There are many factors that facilitate the adoption of EBM. One is the type of literature, the availability of systematic reviews of multiple research studies and the publication of evidence based journals provide validated information. Second is the World Wide Web which has made possible the information available on the desktop and at the point of care. The additional factor is the librarians have acquired more efficient strategies for searching through the tons of literature and locate the evidence. Locating the best evidence involves searching the literature. Literature may be searched through the traditional print resources like the textbook or journals or browsing online electronic databases. There are many online information resources to find the evidence. These include textbooks, journals, PubMed/Medline, MD Consult and many EBM resources available which contain systematic reviews like Up-to-date, Cochrane Library, Evidence Based Medicine from BMJ Group, Dynamed etc. In India full contents of the Cochrane library can be accessed for free through a sponsorship by the ICMR (Indian Council of Medical Research).

2. Review of Literature

Li & Wu, (2011) made an online survey to identify medical librarians' roles in supporting evidence-based medicine (EBM) practice to determine whether medical librarians work settings, work experiences, or job titles made a difference in their EBM responsibilities and find out medical librarians perceptions of their roles in EBM practice. He opined that medical librarians had positive perceptions of their EBM-related responsibilities, which were diverse and specific. Their

willingness and enthusiasm to support and enhance EBM practice was obvious from the survey results. As perceived by some of the participants, making themselves more visible in their institutions, collaborating with teaching faculty members, and promoting their EBM-related services to health care professionals were critical in fully embracing their EBM roles.

In a survey by Majid et al., (2011) to explore nurses awareness and knowledge and attitude towards EBP and barriers faced in 2 public hospitals, the information resources used and their literature searching skills were also investigated showed a positive attitude towards EBP, but they had limited skills in the area of literature searching. So the hospital libraries should also play an active role in developing adequate information literacy skills among the nurses.

Mittal & Perakath, (2010) made a study to assess the knowledge and attitude of surgical trainees at the department of Surgery, Christian Medical College, Vellore, India, towards evidence based medicine and their perceived barriers to its practice. The respondents attitude towards EBM was welcoming and they agreed that EBM was useful in everyday practice and it improved patient care. He suggested the need to increase awareness of and provide access to available sources of medical literature. Also a strong need to include formal training in EBM and basic statistics into the surgical curriculum.

Gavgani & Mohan, (2008) in their study on exploring physicians approaches and attitudes towards EBMP in order to draw inferences on library and information services, revealed that Physicians have positive attitudes towards EBMP and indicated high usage rate of print and electronic sources. The majority of the respondents (79%) are familiar with EBM. Almost all physicians (91.8%) familiar with EBM practice apply EBM in decision making about their patients. The majority of the respondents (82%) agree that EBM is practiced in India, even if rarely. Almost 84% of the respondents preferred to consult the free Web, 74.2% PubMed, 64.5% Medline and other relevant databases, 32% e-journals, 29% The Cochrane Library, and 22.5% specific Web sites. The study concludes that efficient

library and information support services should be provided to physicians to practice evidence based medicine.

Kronenfeld et al., (2007) discussed the implications of EBP and argued that medical librarians in support of EBP can carry out various duties, including collaborating with instructors to integrate EBP into courses and the curriculum, sharing their expertise in searching and evaluating the literature, providing access to resources that support the EBP needs, creating resources such as online tutorials, and conducting EBP workshops.

3. Need and significance of the study

Evidence based medical practice has gained prominence throughout the world, especially in advanced countries. Developing countries have problems practicing EBM since it needs basic literature searching knowledge and skills, second is the time, as the clinicians are too busy to search, analyze and evaluate literature and third EBM resources are scattered and search systems are complicated. Due to these reasons, the practice of EBM has created both opportunities and increased demands on the medical libraries. Here the librarians play a vital role and the skills of the librarians help overcome the information problems encountered by the health practitioners and contribute to evidence based practice and thus improvement in health care.

There are 7 medical colleges in Coastal Karnataka. All the medical colleges are attached to a hospital. All these colleges imparting medical education have libraries providing information services to the faculty and postgraduates. The literature survey shows that since 1992 Evidence based medicine has developed rapidly in the international field. McColl et al, 1998 in their study stated that the practice of EBM improved patient care but the clinicians had a low level of awareness of EBM resources like extracting journals, review publications and databases, Few studies have been conducted on the awareness and attitude of the health professionals towards EBP in India. One of the studies was conducted at

Hyderabad (Gavgani & Mohan, 2008) on the topic "Physicians Attitude towards Evidence- Based Medical practice and health science library services and the target population was comprised of physicians and specialist from government and private hospital in Hyderabad. It revealed that majority of health professionals are familiar with EBM and agreed that EBM is practiced in India. However no study on this topic is being conducted in Coastal Karnataka.

So the objective is to determine the attitude and behaviour of health science professionals especially the clinicians in the medical colleges of Coastal Karnataka towards EBMP and the information resources available in the libraries and also to study the role of health science libraries and the librarians towards the practice of EBM. It was hoped that this study would identify the obstacles and find the solutions to incorporating an evidence based approach in health professionals in Coastal Karnataka.

4. Statement of the problem

The present study is titled as "Attitude and Behaviour of Health Science Professionals towards Evidence Based Medical Practice and Information Resources: A Diagnostic Study in Coastal Karnataka".

5. Definition and meaning of concepts

Attitude

An attitude is a hypothetical construct that represents an individuals degree of like or dislike for an item. Attitudes are generally positive or negative views of a person, place, thing, or event-- this is often referred to as the attitude object. People can also be conflicted or ambivalent toward an object, meaning that they simultaneously possess both positive and negative attitudes toward the item in question (Pittman, n.d.)

(Allport, 1935) defined an attitude as "a mental and neural state of readiness, organized through experience, exerting a directive and dynamic influence upon the individual's response to all objects and situations with which it is related".

Behaviour

As per the oxfords advanced learners dictionary behaviour is to do things in a particular way. Behaviour is “the way a person, an animal, a plant etc. behaves in a particular situation (Oxford learners dictionary).

Health science professional

As per the Wikipedia health care provider or health professional in a organization is a person who delivers proper health care in a systematic way professionally to any individual in need of health care services. In this study the health professionals referred as respondents or users are the faculty and postgraduates from the clinical departments(Wikipedia).

Evidence Based Medical Practice

Evidence Based Medical Practice means clinicians to diagnose the patient’s illness and to determine the most appropriate treatment and best care methods for their patients by using the most accurate information together with their knowledge and experiences.

It is the process of identifying and assessing the best available scientific evidence and integrating this evidence with the clinician’s judgment and the patient’s values to make medical decisions (Evidence-Based Medicine Working Group, 1992).

Information Resources

Information resources as used here shall refer to and include all types and kinds of information resources irrespective of format- print, audio-visual, multi-media, and machine- readable format covering all aspects of the science and practice of medicine and health care and made accessible by the library either as part of its

immediate collection or through networking, resource sharing, and or any licensing arrangements. In this study the web based information resources/clinical information resources/ EBM resources included are Medline/Pub-Med, Cochrane database of systematic reviews, MD consult, Science direct, Ovidsp ,Up-To-Date, CINHAL, EBM Reviews, electronic journals, free web.

Diagnostic

Diagnosis is cause of a certain phenomenon. Diagnosis is used in many different disciplines with variation in use of logic, analytics and experience to determine cause and effect. Diagnostic is using the methods of or yielding a diagnosis (Wikipedia) .

Coastal Karnataka

Karnataka is a state in the southern part of India. It was created on November 1, 1956, with the passing of the States Re-organization Act. Originally known as the State of Mysore, it was renamed Karnataka in 1973. Karnataka is bordered by the Arabian Sea to the west, Goa to the northwest, Maharashtra to the north, Andhra Pradesh to the east, Tamil Nadu to the southeast, and Kerala to the southwest. The state covers an area of 74,122 sq m (191,976 km²), or 5.83% of the total geographical area of India. It is the eighth largest Indian state by area, the ninth largest by population and comprises 30 districts. The konkan coast of Karnataka is generally known for its beautiful beaches and culinary delights made with fresh seafood. Though not as developed as state capital Bengaluru, many smaller cities and towns along Karnataka coastline have been growing steadily over the past few decades. Mangaluru and Udupi are two key locations on the map that stand out for a variety of reasons. Located 371km from Bengaluru, Coastal Mangaluru is a chief port city of Karnataka. Dakshina Kannada especially Mangaluru has always been considered one of the most sought after education destinations which provide quality education in higher and professional courses. Dakshina Kannada district is

home to a wide variety of schools, engineering and medical institutions as well as health and management institutions. Coming to medical institutions, Mangaluru is home to Kasturba Medical College Mangaluru, A.J. Institute of Medical Sciences and Research Centre (AJIMSRC), Father Muller Medical College, K.S. Hegde Medical Academy, Srinivas Institute of Medical Sciences and Research Centre, Yenepoya Medical College which provides quality health care and also teach and train future doctors. Udupi is located 422km northwest of Bengaluru and 60km north of Mangaluru is a landmark for its Krishna Temple and the most prestigious Kasturba Medical college Manipal(Wikipedia).

6. Objectives of the study

The present study has the following objectives

1. To explore the attitude and behaviour of health science professionals towards evidence based medical practice.
2. To explore the availability and accessibility of information resources and services for the practice of evidence based medical practice in health science libraries in Coastal Karnataka.
3. To assess the awareness and use of Information resources by the health professionals in the medical colleges in Coastal Karnataka.
4. To study the problems faced by the health professionals of the health science institution in Coastal Karnataka in the practice of EBM.
5. To propose suitable recommendations for supporting the health professionals in practicing EBM.

7. Hypotheses

1. Health professionals have a positive attitude towards EBMP.
2. Younger generation is more competent in the use of web based clinical information resources: Age is the main criteria.
3. Lack of time is the main barrier to practice of EBM.

8. Scope and limitations of the study

EBM acts as an important link between current scientific research and clinical practice and aims to provide patients with the best possible care. Health science professionals include doctors/clinicians, nurses, dentists, physiotherapists pharmacists and lab technicians working in institutions providing health care. However this study has made an attempt to explore the attitude and behaviour among the doctors/clinicians and postgraduates (MD/MS) working in the medical colleges in Coastal Karnataka. The study intends to explore the attitude and behaviour of health professionals towards evidence based medicine and the information resources available in health science libraries, the health professionals competency in using the information resources, satisfaction level, facilities and services available for the users i.e. the health professionals in Coastal Karnataka. It has excluded some health professionals viz. nurses, dentists, physiotherapists pharmacists and lab technicians. Postgraduate students who are doing postgraduate medical diploma, MCh, MSc medical, MPhil, postgraduate certificate courses have not been considered for the study. In view of the vast number of resources available for EBM, only few selected information resources have been taken for the study based on the inputs received from the libraries of the medical colleges under study through the librarians questionnaire and also on the basis of literature reviewed. This study may not generalize to the total population but it do represent majority of the medical fraternity of the medical colleges in Coastal Karnataka. Keeping in view the enormity of the task, the researcher intends to limit the scope of this study

to cover the seven medical colleges which are located at Mangaluru and Udupi in Coastal Karnataka.

9. Methodology

Research methodology is a way to systematically solve the research problem, in other words a science of studying how research is done scientifically. The scope of the research methodology is wider than that of research methods. So research methodology includes not only the research methods but also consider the logic behind the methods we use in the context of our research study and explain why we are using a particular method or technique.

Based on a comprehensive literature review of publications and after referring LISA (Library and Information Science Abstracts) a questionnaire based survey method was chosen to collect relevant data for the study from the users and librarians of the surveyed institution. Websites of the surveyed institutions were referred for the institutional data.

9.1. Sampling Method

The participants are selected using PPS (Population Proportion Sampling) proportionate of sampling size to total population in the colleges and by random sampling.

9.2. Population of the Study

The population selected for the study was the clinical faculty and postgraduate students of clinical departments in the seven medical colleges of Coastal Karnataka listed below according to the year of establishment.

1. Kasturba Medical College Manipal 1953
2. Kasturba Medical College Mangaluru 1955
3. Father Muller Medical College Mangaluru 1999

4. K.S. Hegde Medical College Deralakatte 1999
5. Yenepoya Medical College Derelakatte 1999
6. A.J. Institute of Medical Sciences Mangaluru 2002
7. Srinivas Institute of Medical Sciences and Research Centre Mangaluru 2009

All the above colleges except one college i.e. Srinivas College of Medical Sciences offer postgraduate courses. The total population of the study as on June 2014 was 2876, consisting of 1394 clinical faculty and 1482 clinical postgraduates. Since the population was large and it is difficult to consult all the clinical faculty and postgraduates within the time frame, it was decided to conduct the study using the sampling technique. The questionnaires were personally distributed to the users. In some colleges online questionnaire was mailed to the respondents.

9.3. Design of questionnaire

Keeping in view the objectives of the study the questionnaire was framed. Two types of questionnaires were designed for collection of data.

1. Questionnaire for librarians
2. Questionnaire for users

Questionnaire for Librarians

The questionnaire for the librarians was designed to collect information regarding the medical college libraries, its facilities, infrastructure, information resources and services. The questionnaire had the following five sections and 36 questions.

Section 1. Personal data
Section 2. Institutional data
Section 3. Library collection
Section 4. Library facility and services
Section 5. Computer and internet facility
Section 6. Web resources/ Clinical information resources/EBM resources

Questionnaire for users

The questionnaire for users was designed to collect the information/data from the target population of the study. The questionnaires comprised of four sections and 29 statements addressing attitudes, behaviour, awareness, knowledge about EBM and barriers to practice it.

Section 1. Included the demographic features.

Section 2. Personal attitude and behaviour towards evidence based medicine.

Section 3. Perception towards Evidence Based Medical Practice

Section 4. Availability of resources to access information, personal skills, awareness in using the resources.

Section 5. This section gave an opportunity for the participants to state their major barriers in practice of EBM.

Preparation of final questionnaire

The primary version of the questionnaire was developed from a comprehensive literature review on the topic. Its face validity for content and construct validation was confirmed by an expert panel of three member from medical faculty and a pilot study was conducted for reliability of the user's questionnaire by distributing it among 20 users in K. S. Hegde medical college and the librarians questionnaire to 2 librarians of Father Muller medical college and Yenepoya medical college. Based on the feedback some modifications were made and the final questionnaire was prepared. This questionnaire was used as a data collection tool. The users questionnaire was distributed among the clinical faculty and clinical postgraduates in the medical colleges of Coastal Karnataka. The librarians questionnaire was distributed among all the librarians of the medical college libraries under the study.

9.4. Determination of sample size

There were 1394 clinical faculty and 1482 clinical postgraduates making a total population of 2876 in the seven medical colleges in Coastal Karnataka. Collecting information from all the users would be a tedious job. Therefore it was decided to conduct a sample survey.

The required sample size was determined from the total population using the following formula by Yamane Taro 1967.

$$n = \frac{N}{1+N(e)^2}$$

Where N is the population size

(e= Marginal error)

e=0.05

Confidence level 95 %

a) Faculty $n = \frac{N}{1+N(e)^2}$

$= \frac{1394}{1+1394(0.05)^2}$

$= 311$

b) Postgraduates $n = \frac{N}{1+N(e)^2}$

$= \frac{1482}{1+1482(0.05)^2}$

$= 315$

Sample size for clinical faculty is estimated to be 311 and for clinical postgraduates 315.

The details of the total population and the sample size calculated have been presented in the table below.

Table: 3.1 Determination of sample size

Category	Total population	Required sample
Clinical Faculty	1394	311
Clinical Postgraduates	1482	315
Total	2876	626

The Table 3.1 reveals that the total population included for the study was 2876, among which a sample of 626 were selected for the study. The sample was selected at 95% confidence level. Out of the total sample, 311 were clinical faculty and 315 were clinical postgraduates.

9.5. Data collection

The researcher had taken prior written permission from the head of all the institutions under the study to conduct the survey. The researcher personally approached the faculty and postgraduates of the clinical departments and distributed the questionnaires. Data was collected over a six months period from July to December 2014. As some of the respondents wanted some explanation on the topic and wished to fill the questionnaire immediately, the investigator waited for them to complete and return. Because of frequent follow up the researcher could achieve her actual sample size. In some colleges online questionnaire was distributed to the respondents. The questionnaire for collecting information about the medical college libraries under the study were distributed among the librarians. The librarian questionnaires were also distributed online. The participants were asked to fill in the questionnaire voluntarily. The researcher personally collected the questionnaire from the users and some questionnaires were received online. Additional

information was collected by interviewing some of the faculty and postgraduates of the clinical departments, which added some qualitative information to the study.

9.6. Analysis of Data

After completing the survey the data collected was scrutinized, tabulated and analyzed by using MS-Excel and statistical package for social sciences (SPSS) version 13. The data was analyzed separately for clinical faculty and clinical postgraduates. The hypotheses was tested by using statistical methods. The researcher sought the help of experts while analyzing the data. Descriptive statistics like Mean, Median, standard deviation, Percentage, Frequency, Scoring by Garrat's method and Inferential statistics like Chi-square, Mann Whitney Test, Fishers Exact Tests, and Binominal test were used to analyze the data. The analyzed data was presented in tabular form and graphic form.

10. Chapter scheme

Chapter I

This chapter gives an introduction to the research topic and explains the need and significance of the study, statement of the problem. It elaborates the topic with the objectives of the study and this chapter also give a brief summary of the remaining chapters.

Chapter II

This chapter gives a detailed review of the literature published in India and abroad on the attitudes and behaviour of health professionals towards evidence based medicine and also the role of librarians and library resources in the practice of EBM. The other related topics were reviewed and presented under separate headings.

Chapter III

This chapter gives a brief description of the research process, including the hypotheses, population of the study, method of data collection, response pattern, techniques used for data analysis and scope and limitation of the study. The chapter also explains the design of the questionnaires.

Chapter IV

This chapter illustrates the data related to the librarians and the medical library resources, facilities and services and other infrastructure available.

Chapter V

This chapter describes the analysis of data on health professionals attitude towards EBM and the awareness, skills in using the information resources, barriers faced for the practice of EBM.

Chapter VI

This is the concluding chapter which gives a detailed summary of the findings. Referring to the results of the data analysis and the results of the research findings, major findings are revealed and also some suggestions and recommendations for information handling in health science libraries are given. Finally it provides the conclusion for the study and the scope for future studies.

11. Findings related to medical college libraries in Coastal Karnataka

The Summary of findings of the study are grouped under various headings and presented here.

11.1 Gender-wise distribution of respondents

- It was found that among the total seven respondents 4 were female and 3 were male accounting for 57.14% and 42.86% respectively.

11.2 Educational qualification of the medical college librarians

- Among the respondents 42.9% possessed doctorate degree in library science. 14.2% possessed MPhil degree in library science and 42.9% master degree in library science. It is found that all the medical college librarians in Coastal Karnataka are professionally qualified.

11.3 Library working hours

- All the medical college libraries were kept open for more than 14 hrs a day on working days and the timings are extended at the time of examination. It was found that all the libraries were kept open on Sundays and holidays also.

11.4 Library resources

- It was found that all the medical college libraries in Coastal Karnataka had a well stocked library as per the MCI guidelines.
- Almost all the colleges except one college followed the open access system.

11.5 Library services

- The study revealed that almost all the medical colleges provide reference service, current awareness service, reprographic service, internet browsing, literature search service, audio visual facility, printing service, scanning service, department library and digital library service. Among them 71.4% of the institution libraries provide book bank facility and information literacy service. (85.7%) of the institution libraries provide inter library loan, bibliographic service and Web OPAC service.

11.6 Computer and internet facility

- It is observed that all the colleges have a minimum of 40 computers in the library. Among them 71.4% have 40 computers, 14.3% have 54 computers and 14.3% have 103 computers in their library.

- All the medical college have leased line internet connectivity in the libraries.
- It is really encouraging to note that all the seven medical colleges had a Wi-Fi enabled campus, thus enabling the users to access the library web based resources from anywhere in the campus.

11.7 Library automation

- It is noted that all the medical colleges in Coastal Karnataka are automated and were using the Easylib software for automation. Majority 85.7% of the colleges have the barcode facility in their libraries.
- It was observed that none of the medical colleges in Coastal Karnataka have implemented the RFID technology in their libraries.

11.8 Library website

- The study revealed that other than the institutional website, majority of the medical college libraries 71.4% have a library website and links are provided to the web based information resources through the websites. 28.6% of the colleges did not have a library website, but the institution website provided complete information about courses offered, details on the faculty, library timings, services etc.

11.9 Providing web-scale discovery tool

- From the study it is seen that majority 71.4% have a web scale discovery tool and 28.6% of the college libraries do not have this facility. This web-scale discovery service provide Google like search box to navigate all the resources in the library including open access resources from a single searchable interface.

11.10 EZproxy services

- It is encouraging to note that 57.1% of the libraries represent have provided EZproxy service to its users. This enables the users of the library to have

access to all the web based clinical information resources subscribed to the library from anywhere.

11.11 Subscription of EBM resources to the library

- Study reveals that all the colleges under the study had access to Dynamed, Science Direct, OvidSP and 71.4% had access to Up-to-date, 42.9% had access to CINAHL, 28.6% had access to BMJ case report, and 14.3% had access to Clinical Key.

11.12 Providing literature search service

- All the medical college librarians provide literature search service to the health professionals. Among them 14.3% of the colleges provided more than 100 literature search per month, 28.6% performed literature search between 51-100, 14.3% between 26-50 literature searches, 28.6% between 10-25 and 14.3% less than 10 literature search per month.

11.13 Consulting health professionals for selection of resources

- It is observed that all the respondents consult the users, thus having PDA mode for acquiring print resources. For acquiring e-resources 5 of the colleges representing 71.4% has adopted the patron driven acquisition mode of acquisition that is by giving trial access to the e-resources and based on the users feedback acquisition is finalized. It is observed that the recent automated program of PDA, pay per view (PPV) model for procuring e-journal article is not practiced in any of the medical college libraries in Coastal Karnataka.

11.14 Training program conducted for the health professionals

- The study revealed that majority 85.7% of the medical college librarians in Coastal Karnataka conducted training program for the health professionals and 14.3% do not conduct training program for the health professionals**.**

- It was found that 85.7% provided user education by demonstration, 71.4% by orientation, 57.1% by hands on training and 14.3% by online tutorial.
- So it is significant that majority of the libraries in Coastal Karnataka provide training program to its users.

11.15 Best practice introduced for marketing EBM resources

- The study revealed that all the medical college librarians in Coastal Karnataka have encouraged maximum utilization of the EBM resources by providing IP based access to all the subscribed EBM resources, 85.7% by providing free internet access, 71.4% by providing access through library websites, 57.1% by providing remote access, information literacy program, and search strategy.

11.16 Obstacles for providing EBM services

- Majority 57.1% of the respondents opined that they do not provide any special service for EBMP in the library, 42.9% opined that lack of EBM resources available and 14.3% opined that lack of subject knowledge in the context of EBM as an obstacle.

11.17 Keeping updated in professional development

- As revealed in the study all the respondents opined that they refer to journal publication to keep themselves updated in professional development. 85.7% by attending conference/seminar and by using social medias, 57.1% by attending training program/workshop. It is encouraging to reveal that majority of the librarians in Coastal Karnataka are using multiple avenues for staying abreast of trends and advancement including more traditional method like reading journal article which all the librarians had chosen.

12. Findings related to the users of the medical college libraries in Coastal Karnataka

12.1 Respondents

The Respondents from the clinical departments of the seven medical colleges under the study are categorized under two groups namely faculty and postgraduates. A sample of 626 respondents was taken from the seven medical colleges under the study.

- It is observed from the study that out of 626 respondents 311 were clinical faculty respondents and 315 were clinical postgraduates.
- Among the sample size taken for the study 58.9% are male respondents and the remaining 41.1% are female respondents. In case of faculty 59.5% are male and 40.5% are female. Among the postgraduates 58.4% are male and 41.6% are female.

12.2 Age-wise distribution of the respondents

- The largest group with a percentage of 76.5% is in the age group 25-34years, whereas 11.2% of the respondents are in the age group of 35-44years and 7.8% in the age group 45-54years. Among them 4.4% of the respondents are in the group of above 55years.
- In case of faculty and postgraduates 54.7% and 98.1% respectively were in the age group 25-34years, 20.6% and 1.9% respectively in the age group 35-44years. There were 15.8% faculty and no postgraduates in the age group 45-54 years. In the age group above 55years there were 9% faculty and no postgraduates.
- It is found that majority 76.5% of the respondents are in the age group of 25-34 years and postgraduates are higher 98.1% in the younger age group.

12.3 Designation-wise distribution of faculty

- It is noted that among the faculty respondents 41.2% were from the Assistant professor cadre, 24.4% from the Lecturer cadre, 23.5% from the Professor cadre and 10.9% from the Associate professor cadre.
- Majority 41.2% of the faculty were found to be from the Assistant professor cadre.

12.4 Year-wise distribution of postgraduates

- Among the postgraduates 35.9% were from the 2nd year, 34.6% from 1st year and 29.5% from the 3rd year.
- It was found that majority 35.9% of the postgraduates were found to be from the 2^{nd} year.

12.5 Time spent on patient care, teaching and research

- The study revealed that the average percentage of time spent on patient care by the respondents in a month was found to be 65.23 ± 15.41. Average percentage of time spent on teaching by the respondents was found to be 22.81 ± 15.50. Average percentage of time spent on research by the respondents was found to be 12.78 ± 10.49.
- So the respondents spend majority of their time on patient care followed by teaching and research.
- The average percentage of time spent on patient care by the faculty is 62.67 ± 14.15 while postgraduate spend an average percentage of time 67.76 ± 16.19.
- So the postgraduates spend significantly higher time on patient care compared to the faculty.
- The average percentage of time spent on teaching by the faculty in a month was found to be 26.29 ± 12.06 while postgraduates spend average percentage of time19.36 ± 17.63.

- So the faculty spend significantly higher time on teaching compared to postgraduates.
- The average percentage of time spent on research by the faculty in a month was found to be 11.32 ± 8.54 while postgraduates spend an average percentage of time 14.23 ± 11.95 on research.
- So the postgraduates spend significantly higher time on research compared to faculty.

12.6 Personal attitude towards EBM

12.6.1 Practice of EBM in India from the respondents viewpoint

- It was found that 81.4% of the respondents opined that EBM is widely practiced in India. 15.7% opined that it is rarely practiced and 2.9% stated that EBM is not practiced at all in India.
- Among the faculty and postgraduates 82% and 81% respectively stated that EBM is widely practiced in India. 15.1% and 16.2% respectively stated that EBM is rarely practiced, 2.9% faculty and 2.8% postgraduates stated that EBM is not practiced at all in India.
- It is encouraging to know that an overall percentage of 97.1% of the respondents agree that EBM is practiced in India even if rarely.

12.6.2 Attended course on EBM

- It was found that among the respondents 60.7% have not attended any course or workshop on EBM and 39.3% have attended course/workshop on EBM.
- Among the faculty respondents 52.1% have not attended course/workshop in EBM and 47.9% attended course/workshop on EBM.
- Among the postgraduates 69.2% have not attended and 30.8% have attended course or workshop on EBM.
- It is observed that majority of the respondents have not attended any course or workshop on EBM. This may be due to the busy schedule of the clinicians

with patient care, teaching and research. This may also be due to the fact that not many course/workshop have been conducted in medical colleges as EBM is a very new and upcoming topic.

12.6.3 Attitude towards current promotion in EBM

- It is found that 63.9% of the total respondents attitude towards current promotion of EBM was welcoming. 28% were strongly welcoming and 1.6% attitude was not welcoming. Among them 6.5% of the respondents did not know about EBM.
- Among the faculty 69.4% and 58.4% among the postgraduates had a welcoming attitude. 23.5% faculty and 32.4% postgraduates had a strongly welcoming attitude. Faculty 1.6% and 1.6% postgraduates were not welcoming. Faculty 15.5% and 7.6% of postgraduates said that they do not know about EBM.
- Overall 91.9% of the health professionals have positive attitude towards evidence based medical Practice.
- It is heartening to observe that the clinicians have a positive attitude towards EBM and it is found that the clinicians are more welcoming towards the fact that practice should be updated based on the best possible current evidence.

12.6.4 Respondents opinion on need for access/subscription to EBM resources

- The study shows that 96% of the total respondents expressed that they needed access to EBM resources and 4% expressed that they do not need access to EBM resources.
- Among the faculty and postgraduates 96.1% and 95.9% respectively needed access to EBM resources whereas faculty 3.9% and postgraduates 4.1% opined that they do not need access to EBM resources.
- So the findings revealed that vast majority of the respondents opined that they need access/subscription to EBM resources and only a negligible

number of respondents 4% stated that they do not need access/subscription to the EBM resources.

12.6.5 Purpose for which the EBM resources are accessed

- The study revealed that 66.5% of the respondents accessed EBM resources for providing quality care, 54.2% for research and 48.9% for teaching, 24.4% just to update knowledge and 20.8% as point of care tool.
- Among the faculty and postgraduates 69.8% and 63.2% respectively accessed EBM for quality care, 55.9% and 52.4% respectively for research, 60.8% and 37.1% respectively for teaching, 19.9% and 21.6% respectively as a point of care tool.
- This reveals that majority of the respondents accessed EBM resources for providing quality care to the patients.

12.6.6 Opinion on the necessity to incorporate the use of evidence in daily practice

- From the study it was revealed that 48.4% of the respondents agreed that it is necessary to incorporate the use of evidence in daily practice, 39.5% strongly agreed, 10.5% were neutral in their opinion, 1% disagreed to this and 0.6% strongly disagreed**.**
- In case of the faculty and postgraduate respondents 45% and 51.7% respectively agreed that it is necessary to incorporate the use of EBM in daily practice. Faculty 41.5% and 37.5% postgraduates strongly agreed to this and 12.2% faculty and 8.9% postgraduates were neutral whereas 0.3% faculty and 1.6% postgraduates disagreed and 1% faculty and 0.3% postgraduates stated that they strongly disagreed**.**
- It is evident that majority of the respondents agree that it is necessary to incorporate the use of evidence in daily practice.

12.6.7 Practice of EBM in decision making about the patients

- It is observed that 89.8% of the total population practice evidence based medicine in decision making about the patients, 10.2% do not practice EBM in decision making of their patients.
- Among the faculty and postgraduate respondents 90.4% and 89.2% respectively practice EBM in decision making about the patients. Faculty 9.6% and 10.8% postgraduates do not practice E.B.M in decision making about the patients.
- It is encouraging to find that majority of the clinicians are practicing EBM in decision making of patient care and treatment.

12.6.8 Impact of subscription and use of EBM resources in clinical decision making

- The study revealed that 63.7% of the respondents felt that use of EBM resources improved decision making in new cases, 52.6% of the respondents felt that by using EBM resources decision making has become faster, 31.6% opined that the use of EBM resources has decreased the barriers to answering clinical questions, 15.8% opined that using EBM resources shortened the hospital stay for patients and 8.1% were of the opinion that use of EBM resources has increased the number of patients examined.
- In case of the faculty and postgraduates 69.1% and 58.4% respectively were of the opinion that use of EBM resources improved decision making in new cases, 47.3% faculty and 58% postgraduates felt that by using EBM resources decision making has become faster. Faculty 37% and 26.3% postgraduates were of the opinion that EBM resources decreased barriers to answering clinical questions. Faculty 8.7% and postgraduates 7.6% opined that use of EBM resources has increased the number of patients examined. Faculty 14.2% and postgraduates 17.5% were of the opinion that use of EBM has shortened the hospital stay for patients.

- It was observed that majority of the respondents opined that the subscription and use of EBM resources improved decision making in new cases.

12.7 Perception towards evidence based medical practice

12.7.1 Practicing EBM improves patient care

- The respondents strongly agree that practicing EBM improves patient care with mean 4.11 ± .63(>4). Both faculty and postgraduates strongly agree that EBM improves patient care with mean 4.10 ± .63 and 4.13 ± .63 respectively.
- There is no significant difference between faculty and postgraduates in their opinion. So it is revealed that vast majority of the respondents nearly 88.1% strongly agreed or agreed to the statement that practicing EBM improves patient care.

12.7.2 Busy doctors do not have the time to find and critically appraise the relevant research paper

- It is revealed that the respondents agree that busy doctors do not have the time to find and critically appraise the relevant research paper with mean 3.50 ± .99(>3). Both the faculty and postgraduates agreed that that busy doctors do not have the time to find and critically appraise the relevant research paper with mean 3.37 ± 1.04 and 3.63 ± .94 respectively. Postgraduates agree to this fact more than the faculty.

12.7.3 EBM is a good concept that fails in practice

- Respondents agree that EBM is a good concept that fails in practice with mean 3.19 ± 1.00(>3). Both faculty and postgraduates agree that EBM is a good concept but fails in practice with mean 3.07 ± .96 and 3.30 ± 1.02 respectively.

- It is found that there is high significant difference between faculty and postgraduates in their opinion. Postgraduates agree to this fact more than the faculty.

12.7.4 The concept of EBM is not applicable to my practice

- Respondents disagree to the statement that the concept of EBM is not applicable to their practice with mean 2.27 ± .875(<3). Both faculty and postgraduates disagree that the concept of EBM is not applicable to their practice with mean 2.18 ± .777 and 2.35 ± .954 respectively.
- It is found that there is significant difference between faculty and postgraduates in their opinion. Postgraduates agree to this fact more than the faculty.

12.8 Availability of resources to access information and personal skill in using EBM resources

12.8.1 Having facility to access relevant database at the work place

- It was found that 78.4% of the respondents have facility to access to relevant database at their workplace and 21.6% had no facility to access relevant database at their workplace.
- Among the faculty and postgraduates 79.1% and 77.8% respectively had facility to access relevant database at their work place. Whereas 20.9% faculty and postgraduates 22.2% had no facility to access relevant database at their work place.
- It is found that there is no significant difference between faculty and postgraduates in their opinion.

12.8.2 Respondents familiarity with the medical search engine

- The study revealed that 79.7% of the total respondents were familiar with the medical search engine like Medline, CINAHL and 20.3% were not familiar with the medical search engines.
- Among them 83.3% faculty and 76.2% postgraduates were familiar with medical search engines and faculty 16.7% and postgraduates 23.8% were not familiar with the medical search engines.
- The faculty members are more familiar with the medical search engines like Medline, CINAHL etc. This may be due to the fact that the faculty have more experience on patient care and used this search engines for clinical queries.

12.8.3 Competency level in the use of web based information resources for the practice of EBM

- It is found that in the evaluation of competency in using the web based information resources for the practice of EBM, 51.8% of the respondents were experts in using free web, whereas 55.1% of the respondents were expert in using PubMed/ Medline, while 47.4% in electronic journals.
- Among the faculty it is noted that 59.8% were expert in using Medline/ PubMed whereas 58.5% were expert in using free web, while 52.7% in electronic journals.
- Among the postgraduates it is noted that 50.5% were expert in using Medline/ PubMed whereas 45.1% were expert in using free web, while 42.2% in electronic journals.
- In the study the difference between the faculty and postgraduates competency in the use of web based clinical information resources was statistically significant in using Cochrane database of systematic reviews, MDconsult, science direct, CINAHL,electronic journals and free web.

- It is revealed that faculty are more competent than the postgraduates in the use of web based clinical information resources.
- It is found that while comparing the age group and competency relation, the level of competency is significantly associated with age, older the age group have better competency compared to younger age group.

12.8.4 Respondents confidence to critically review professional literature

- It is noted that 55.4% of the respondents were confident in their ability to review professional literature and 44.6% were not confident.
- Faculty and postgraduates 61.1% and 49.8% respectively were confident in their ability to critically review professional literature whereas faculty 38.9% and postgraduates 50.2% were not confident in their ability to critically review professional literature.
- Faculty were significantly more confident to critically review professional literature compared to postgraduates.

12.8.5 Training provided by the institution library on information searching and retrieving skills

- It is observed from the study that 55.8% of the respondents opined that they were trained by the institution library on information searching and retrieval skills and 44.2% opined that they were not trained.
- Faculty 43.7% and 67.6% postgraduates opined that they were trained by the institution library whereas 56.3% faculty and 32.4% postgraduates opined they were not trained by the institution library on information searching and retrieval skills.
- The study reveals that there is a significant difference between the faculty and postgraduates in the level of training provided by the medical colleges in Coastal Karnataka. This may be due to the fact that the postgraduates are provided orientation program when they join the course and the college

conduct research methodology courses for the postgraduates where they are exposed to topics like how to make literature review etc.

12.8.6 Order of importance of the information resources as an aid in clinical decision making

- It was observed that preference of information resources as an aid for clinical decision making was textbooks/journals in print with Garrett's mean score 62.3. The second most preferred is full text electronic journals Garrett's mean score 55.2 followed by EBM resources with score 47.7.
- The same result was observed in case of faculty and postgraduates. Textbooks/journals in print with Garrett's mean score 64.8 and 59.8 respectively was the most preferred information resource and the second preferred information resource was full text electronic journals with Garrets mean score faculty 55.2 and postgraduates 55.2 followed by EBM resources faculty 47.2 and postgraduates 48.1.

- The study revealed that the print materials are still preferred, though the use of electronic materials acquired in the libraries is on the rise. This may be attributed to low awareness of using digital resources.

12.8.7 Reasons for preference for use of print resources

- It was observed that 70.9% of the total respondents opined that their preference for print resources was because they were easy to use without any devices and 33.7% felt that they were most readily available resources. The faculty and postgraduate 74.3% and 67.6% respectively opined print resources were easy to use. 34.4% faculty and 33% postgraduates opined that they were most readily available resources.

12.8.8 Reasons for preference of online resources

- The reasons for preferring online resources opined by the respondents was that they were easy to access 54.2% followed by free on the web 44.2% and 41.5% that they were time saving.
- Among the faculty 56.3% opined that they are easy to access followed by 46% free on the web and 39.9% time saving. Among the postgraduates 52.1% opined that their preference for online resources was because they were easy to access followed by time saving 43.2% and 42.5% that it is free on the web.

12.8.9 Use and awareness of growing number of database resources available electronically

- It is revealed that 71.6% of the respondents used Medline/Pub-Med followed by Free web 60.1%, Electronic journals 49.5%, MD consult 34.8%, Science Direct 33.2%, up-to-date 23.6%, Cochrane database of systematic reviews 20.1%, OvidSP 19.6%, EBM reviews 13.1% and CINAHL 5.6%.
- It is observed that maximum number of respondents preferred to consult Medline/Pub-Med , free web and e-journals and even though the Cochrane Library is an international collaboration involved in the systematic reviewing, appraising and disseminating of accurate and reliable evidence in medical sciences, it is not much preferred. This indicates that the clinicians are not aware of the specific web based resources on EBM and thus they use the free web.
- In this study difference between the faculty and postgraduates in the use and awareness regarding the growing number of database resources which are available electronically was statistically significant in EBM reviews and OvidSP database resources.

12.8.10 Level of utilization

- On comparing the categories by levels of utilization among the 2 categories of study respondents, there was no statistically significant relationship.
- The study reveals that among the respondents 68.4% showed poor utilisation, 29.7% showed moderate utilisation and 1.9% showed excellent utilisation of the resources.
- It is evident that the utilization of the web based clinical information resources is poor.

12.8.11 Satisfaction level on awareness program conducted by the library on the use of EBM resources

- It is observed that maximum numbers of the respondent 48.9% were satisfied with the awareness program conducted by library on the use of EBM resources followed by uncertain 34.5%, dissatisfied 7.3%, highly satisfied 6.7% and highly dissatisfied 2.6%.
- Among the faculty 43.1% were found to be satisfied with the awareness program conducted by library on the use of EBM resources followed by uncertain 39.9%, dissatisfied 9.3%, highly satisfied 3.9% and highly dissatisfied 3.9%.
- Among the postgraduates 54.6% were found to be satisfied with the awareness program conducted by library on the use of EBM resources followed by uncertain 29.2%, highly satisfied 9.5%, dissatisfied 5.4% and highly dissatisfied 1.3%.
- As per the study the print materials are still preferred though the electronic materials acquired in the libraries are on the rise. This may be attributed to two reasons, lack of promotion on the part of libraries and low awareness of using digital resources. In case of postgraduates they are more satisfied with

the awareness programme conducted by the library may be due to the fact that they attend the training sessions conducted by the library.

12.8.12 Satisfaction with available EBM resources

- From the study it is found that 71.2% of the total respondents opined that they were satisfied with the available EBM resources and 28.8% opined that they were not satisfied.
- Among the faculty and postgraduates 74.3% and 68.3% were satisfied whereas faculty 25.7% and postgraduates 31.7% were not satisfied with available EBM resources.

12.8.13 Barriers faced by the respondent in the practice of EBM

- The study revealed that the main barrier is the time it takes to search 78.4% and the same was observed with the faculty 80.4% and postgraduates 76.5% followed by no ready access to EBM resources 66.6% and in the case of faculty and postgraduates it is 70.7% and 62.5% respectively. This was followed by Lack of searching skills 63.3% and in case of faculty and postgraduates 65% and 61.6% respectively, too much information that is not critically relevant 60.5% and in case of faculty and postgraduates it is 69.8% and 51.4%, lack of knowledge of resources 56.4% and in case of faculty and postgraduates 65% and 47.9% respectively, Threat to clinical freedom/judgement 48.1% and in case of faculty and postgraduates 51.8% and 44.4%. It is clear and evident that majority i.e. more than 60% of the health professionals opined that time, no ready access and skill are the major barrier faced in the practice of EBM. Among them time is the main barrier which is 78.4%.
- On comparing the levels of barrier among the two categories of the study respondents it was revealed that there is highly significant difference in the

level of barrier experienced. The faculty have experienced more barriers compared to the postgraduates.

12.9 Findings in relation to Hypotheses

The entire hypotheses formulated in the study is tested and the results are shown below

Hypothesis 1: Health professionals have a positive attitude towards EBMP

The data was collected to determine the respondents current attitude towards current promotion of EBM. Most of the respondents 63.9% attitude was "welcoming" towards the current promotion of EBM, 28% were strongly welcoming, 1.6% was not welcoming and 6.5% opined that they do not know.

Among the faculty respondents 69.5% and postgraduates 58.4% had a welcoming attitude 23.5% faculty and 32.4% postgraduates had a strongly welcoming attitude. 1.6% of the faculty and 1.6% postgraduates were not welcoming. Faculty 15.5% and postgraduates 7.6% opined that they do not know.

So the chi-square test shows that there is significant difference ($p=0.036<0.05$) between the two categories of respondents. Postgraduates have better attitude towards the promotion of EBM compared to the faculty.

Overall 91.9% of the health professionals have positive attitude towards Evidence Based Medical Practice [$X^2=967.0$ d.f=2, $p=0.000<0.01S$].

So the Hypothesis 1 is accepted.

Hypothesis 2: Younger generation is more competent in the use of web based clinical information resources: Age is the main criteria.

The data on the competency of the health professionals in using the web based EBM resources was collected. This was compared with the age group.

In the age group of 25-34yrs 35.5% have high competency, 49.5% moderate competency. In the age group of 35-44, 32.9% have high competency, 60% have moderate competency. In the age group 45-54yrs 52.8% have high competency,

45.5% moderate competency. In the age group above 55yrs, 43.3% have high competency, 36.7% moderate competency.

Level of competency is significantly associated with age as [X^2=13.9, p=0.030<0.05, S], which shows that older the age group have better competency compared to younger age group.

So the Hypothesis 2 is not accepted.

This may be due to the reasons that to use the web based clinical information resources for the practice of EBM it is required to have the core skills involved in the practice of EBM. This can be got only through experience, therefore this study also reveals that older the age better is the competency to access the web based resources for the practice of EBM.

Hypothesis 3: Lack of time is the main barrier to practice EBM

The main barrier revealed from the study is the time it takes to search 78.4% and the same was observed with the faculty 80.4% and postgraduates 76.5% followed by no ready access to EBM resources 66.6% and in the case of faculty and postgraduates it is 70.7% and 62.5% respectively. This was followed by lack of searching skills 63.3% and in case of faculty and postgraduates 65% and 61.6% respectively, Too much information that is not critically relevant 60.5% and in case of faculty and postgraduates it is 69.8% and 51.4%, lack of knowledge of resources 56.4% and in case of faculty and postgraduates 65% and 47.9%, Threat to clinical freedom/judgement 48.1% and in case of faculty and postgraduates 51.8% and 44.4% respectively. It is clear and evident that majority i.e. more than 60% of the health professionals opined that time, no ready access and skill are the major barrier faced in the practice of EBM. Among them time is the main barrier which is 78.4%. [p=0.000<0.001, HS].

So the Hypothesis 3 is accepted.

13. Suggestions

The expectations of our customers and progress of technology are transforming the ways our libraries are structured and organized. Based on the findings and observation the study suggests some important points that may be considered by the librarians in Coastal Karnataka to serve their health professionals efficiently.

- Though the health professionals attitude towards evidence based medical practice is found to be positive, approximately 25% of the clinicians and one third of the postgraduates were not satisfied with the available EBM resources/clinical information resources. Therefore it is suggested that the medical libraries in addition to the core collection of resources, should promote subscription to synthesized resources which are designed to answer clinical questions that arise in daily practice at the point of care like clinical key, up-to-date, EBM reviews etc. to support the clinicians need, thus enabling cost effective, timely and convenient access to medical information and knowledge.

- As revealed in the study majority of the health professionals prefer the print resources, so in this digital era, in addition to subscribing to the web based information resources print versions should be continued.

- It is suggested that networking of medical libraries at the local level and national level to share the resources needs to be strengthened. Since medical journals and databases are very expensive medical institutions should go for consortia approach and resources sharing and networking so that the health professionals will benefit by having access to maximum number of resources at minimum expenditure.

- In addition to providing infrastructure for web based access to information, a 24 hours library service in a medical college would foster the information needs of the health professionals as in this study preference was given to print resources. The health professionals especially the postgraduates will be busy during the normal working hours and they need the facility after their class and hospital work.

- It is recommended that RFID technology to be implemented in the medical college libraries in Coastal Karnataka as this technology will address the security and materials tracing requirement of the libraries.

- It was observed that the majority of the faculty and postgraduates in the medical colleges in Coastal Karnataka have not attended any course /workshop on EBM. On personally interacting with the clinicians it was found that not many courses were conducted on EBM in the medical colleges. So it is suggested that medical colleges should conduct periodic courses in EBM and EBMP.

- EBM should be included in the undergraduate curriculum (final year and interns) as it will improve the literature search skills and EBM knowledge.
- It is recommended that as time is the main barrier faced by the clinicians, librarians should have strong information awareness and thus have the ability to differentiate; select evaluate and synthesize literature to find the best information for the clinicians.
- As the medical science and the concept of EBM and also new technologies are rapidly emerging librarians need to embrace the concept of life-long learning to play an active role in EBM practice.

- It is recommended that the health professionals to be included in the selection of database by providing trial access to the resources and purchase

should be finalized as per the feedback. The latest pay per view/PPV model for e- journals can work well in combination with the traditional methods and it cannot be taken as the only acquisition model.

- Today the value of library is not measured in terms of collection and building, it depends on how they serve the users and meet their requirement. Here user education plays an important role. It is suggested to conduct user education programmes for the health professionals to introduce different resources in the library. Marketing of the information resources available in the library will trigger the usage of the resources.

- User education results in information literacy. Hence highly planned user education will enhance users information literacy.
- Most of the respondents not only had positive attitudes towards EBM, but also believed that practicing EBM improved patient care. The study also revealed that majority of the respondents had the facility to access relevant databases at their workplace and about 21% in the medical colleges did not have the facility to access the resources at their workplace. So it is suggested that proper facilities like internet, computer etc. may be provided at their workplace. Providing IP authentication access to the web resources subscribed to the library with multi user license will facilitate the users to access the web based resources on any computer.

- As revealed in the study there is significant difference in the level of training provided by the library on information searching and retrieving skills among the faculty and postgraduates. It is suggested that the clinician should be trained with information searching and retrieving skills and conduct training sessions for the faculty in the departments in small groups to familiarize and to acquaint them with the resources available in the library.

- The users should be provided with a unified interface and ‘one stop” searching, browsing, retrieving and utilization so that this will save the time of the users searching multiple sources.

- Remote access should be provided to the online resources of the library to the clinicians by providing username and password so that they have access anywhere anytime and not only in the campus.

- Conduct ongoing evaluations of users needs to ensure that services meet current and future information needs. Medical libraries need to study, investigate user needs and actively provide timely information services for evidence based medical practice.

- As it was found that more than 50% of the respondents preferred to consult Pubmed, Free web and E-journals and the Cochrane database and other EBM resources were used by only a small portion of the respondents, it is necessary to conduct the awareness programme on the specific EBM resources available.

- Training courses should be initiated in evidence based medical librarianship to train librarians in the use of medical terminology and literature, so that every medical college will have the services of a trained medical librarian who is well-versed in evidence based medical librarianship (EBML).

- Librarians need to be deputed to workshops, training programs and conference to train them and also keep updated in the field.
- The medical colleges in Coastal Karnataka can jointly set up a EBM evidence centre with support from a team of specialists having skills of literature searching, epidemiology, clinical medicine, health informatics and computer technology. This centre will benefit all the health professionals in Coastal Karnataka.

- A library planning to implement new services like web-scale/ezproxy service should frame a team of library experts and active stack holders to do the evaluation, selection and recommendation for purchase.

14. Scope for further studies

- As it is seen that there is a world-wide shift in clinical practice from the traditional opinion-based care to the one based on updated clinical evidence, further studies can be conducted to find out the awareness, attitude and behaviour towards evidence based medicine practice and information resources among other health professionals like dentists, nurses, physiotherapists and pharmacists.

- Comparative studies can be conducted to explore the awareness, attitude and behaviour towards evidence based medicine resources/practice between various health professionals in medical, dental, nursing and physiotherapy faculties.

- The perceptions and use of evidence based medicine resources can be investigated and compared among various medical professionals like physicians, surgeons, ophthalmologists, orthopaedicians, neurologists, oncologists etc.

15. Conclusion

The rapid growth of medical information and the complex treatment procedure has led to the use of best and most valid evidence. Evidence based medical practice has brought new challenges as well as new opportunities to medical libraries and librarians. It was found that the health professionals had a positive attitude towards evidence based medical practice. The health professionals believe that EBP improves the quality of patient care and will help them to take decisions about the patient. Infrastructure, efficient access to the information

resources and the skills to retrieve information are necessary for the health professionals to implement evidence based medical practice. From the study it is revealed that the health professionals have felt the need for access to the information resources for the practice of evidence based medicine. The initiative to provide awareness to the health professionals, improving their search skills are a very important step to enhancing the use of EBM resources/clinical information resources. As the health professionals become more knowledgeable and familiar with the types of resources available to them, the level of utilization of the resources will increase. The users feedback and the usage statistics will help the librarians in recommending/renewing the subscription to the resources. Evidence based medical practice aims at minimizing medical mistakes, hence it is very essential that modern society and health science librarians/libraries should work in this direction to achieve the goal by providing effective information support service to the health professionals The roles of librarians are diversifying to include management of electronic resources, user instruction and support specialized research and clinical information search services and involvement in institution level quality improvement. EBM has a great potential to favourably impact the education, practice and research in medicine in India. The Medical Council of India and other apex bodies should take measures to implement EBM practice in the hospitals around the country. So the topic of research namely the evidence based approach of the health professionals has a significant relevance in the medical library field because the medical professionals want authentic guidelines to support their decision regarding line of treatment and also in a minimum possible time.

References:

Ajuwon, G. A. (2006). Use of the Internet for health information by physicians for patient care in a teaching hospital in Ibadan, Nigeria. *Biomedical Digital Libraries*, *3*, 12. http://doi.org/10.1186/1742-5581-3-12

Allport, G. . (1935). Attitudes. In C. Murchison (Ed.), *Handbook of Social Psychology*. Worcester: Mass: Clark University Press.

Evidence-Based Medicine Working Group. (1992). Evidence-based medicine. A new approach to teaching the practice of medicine. *JAMA*, *268*(17), 2420–2425.

Fuller, S. S., Ketchell, D. S., Tarczy-Hornoch, P., & Masuda, D. (1999). Integrating knowledge resources at the point of care: opportunities for librarians. *Bulletin of the Medical Library Association*, *87*(4), 393–403.

Gavgani, V. Z. (2009). Evidence-based medical librarianship in Iran: an introduction. *Webology*, *6*(2). Retrieved from http://www.webology.org/2009/v6n2/a72.html

Gavgani, V. Z., & Mohan, V. V. (2008). Physicians' attitude towards evidence-based medical practice and health science library services. *LIBRES Library and Information Science*, *18*(1), 1–10.

Jordan, T. J. (2002). *Understanding Medical Information: A User's Guide to Informatics and Decision Making*. NewYork: McGraw Hill.

King, D. N. (1987). The contribution of hospital library information services to clinical care: a study in eight hospitals. *Bulletin of the Medical Library Association*, *75*(4), 291–301.

Kronenfeld, M., Stephenson, P. L., Nail-Chiwetalu, B., Tweed, E. M., Sauers, E. L., McLeod, T. C. V., … Nail-Chiwetalu, B. (2007). Review for librarians of evidence-based practice in nursing and the allied health professions in the United States. *Journal of the Medical Library Association : JMLA*, *95*(4), 394–407.

Lewis, R. A., Urquhart, C. J., & Rolinson, J. (1998). Health professionals' attitudes towards evidence-based medicine and the role of the information professional in exploitation of the research evidence. *Journal of Information Science*, *24*(5), 281–290.

Li, P., & Wu, L. (2011). Supporting evidence-based medicine: a survey of U.S. medical librarians. *Medical Reference Services Quarterly*, *30*(4), 365–381. http://doi.org/10.1080/02763869.2011.609069

Mittal, R., & Perakath, B. (2010). Evidence-based surgery: knowledge, attitudes, and perceived barriers among surgical trainees. *Journal of Surgical Education*, *67*(5), 278–282. http://doi.org/10.1016/j.jsurg.2010.06.012

Mukherjee, S., Sarkar, B., Mukhopadhyay, S., & Chakrabarti, S. (2015). Evidence Based Medicine: Assessing Knowledge, Attitudes and Barriers in Post-graduate Training. *British Journal of Medicine and Medical Research*, *7*(11), 895–903.

Oxford Advanced Learner's Dictionary at OxfordLearnersDictionaries.com. (n.d.). Retrieved March 15, 2016, from http://www.oxfordlearnersdictionaries.com/definition/english/behaviour?q=behaviour

Sackett, D. L., Rosenberg, W. M., Gray, J. A., Haynes, R. B., & Richardson, W. S. (1996). Evidence based medicine: what it is and what it isn't. *BMJ□: British Medical Journal*, *312*(7023), 71–72.

Scherrer, C. S., & Dorsch, J. L. (1999). The evolving role of the librarian in evidence-based medicine. *Bulletin of the Medical Library Association*, *87*(3), 322.

South Canara. (2016, March 28). In *Wikipedia, the free encyclopedia*. Retrieved from https://en.wikipedia.org/w/index.php?title=South_Canara&oldid=712317648

Younger, P. (2010). Internet-based information-seeking behaviour amongst doctors and nurses: a short review of the literature. *Health Information and Libraries Journal*, *27*(1), 2–10.

Zarea, V. (2006). Evidence based medical approach among clinical faculty members. *Medical Journal of Tabriz University of Medical Science and Health Science*, *28*(4), 61–66.

Zeidan, A. Z., & Behairy, M. M. (2010). Knowledge Attitudes and Practices of evidence based medicine among residence doctors in Sudan. *Sudan Journal of Medical Sciences*, *5*(3), 207–212.

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